

# A West Africa LDAS for Forecasting Extreme Hydrological Events

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## General Description

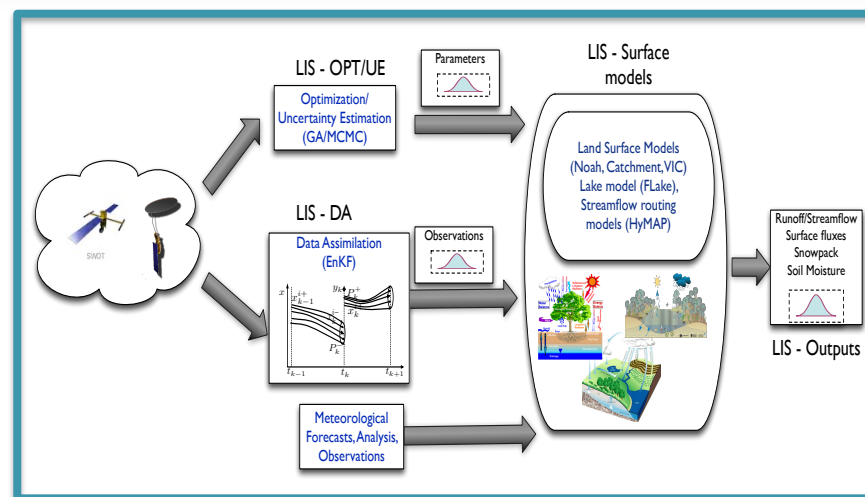
- We propose to partner with the SERVIR-West Africa hub AGRHYMET to provide an improved land data assimilation system (LDAS) for integrated water management in the areas of the AGRHYMET member nations, with a focus on (1) hydrological modeling to provide meteorological, hydrological, and agricultural drought characterizations and forecasts, and (2) flood modeling and forecasting.

## Project Objectives/Outcomes

- Improved parameterization and surface water dynamic modeling considering reservoirs and lakes.
- Implement the modeling system and a multivariate remote sensing data assimilation (DA) system for improved forecast initial conditions over West Africa.
- Implementation and evaluation of the forecast system using GEOS-5 atmospheric forecasts.
- Train SERVIR-West Africa hub and transfer the LDAS for independent forecast simulations and analysis.

## Societal Benefit

- Near real time, real time and seasonal forecasts derived from the West Africa LDAS will be useful for early disaster warning systems, minimizing flood impacts on riverine population and for an optimal water management system, in particular for irrigation purposes.
- The collaboration with AGRHYMET team will increase its capacity building leading to improve technical knowledge on remote sensing, hydrological modeling and extreme event forecast.
- The system can be potentially adapted to other SERVIR hubs through future agreements.



Schematic of the NASA Land Information System (LIS).

## Focus Countries

The forecast system will cover the whole West African domain, focusing on SERVIR-West Africa hub member nations (Burkina Faso, Ghana, Niger, and Senegal).

Project Milestones	Year
Satellite data processing and initial implementation and evaluation of HyMAP river routing scheme	2016
Implementation and evaluation of multivariate DA (soil moisture and terrestrial water storage)	2017
Perform GEOS-5 data pre-processing, forecast experiments and delivery of the LDAS system to AGRHYMET	2018



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